



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
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D212-664-201B
Job Sheet 199277



Part No: D212-664-201B

Job Qty: 1 pcs

Part Name: Aft Crosstube - High



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 8/16/19

Job Tracking No:

Due Date: 8/19/19

Created By: Jennifer Renwick

Type: SOLD

Description:

Note: D212-664 REV.E/IIN-D212-664 REV.J IPP RevB: as per ECN09-696 09.11.20 DD verified by:EC IPP REV:C 11.08.08 PER ECN 11-614 DD VERF:EC IPP REV:D 14.02.12 AS PER DSI9680 REVA DD VERF:JLM IPP REV:E 14.05.28 AS PER ECN14-570 DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Packaging 1 - Pick Kit	1		8/19/19	0.00	0.00	Packaging 1 - 1		
		pcs					Packaging 1 - 2		
							Packaging 1 - 3		
							Packaging 1 - 4		
							Packaging 1 - 5		
							Packaging 1 - 6		
							Packaging 1 - 7		
							Packaging 1 - 8		
							Packaging 1 - 9		
							Packaging 1 - 10		
							Packaging 1 - 11		
							Packaging 1 - 12		
							Packaging 1 - 13		
							Packaging 1 - 14		
							Packaging 1 - 15		
							Packaging 1 - 16		
							Packaging 1 - 17		
							Packaging 1 - 18		
							Packaging 1 - 19		
							Packaging 1 - 20		
							Packaging 1 - 21		
							Packaging 1 - 22		
							Packaging 1 - 23		
							Packaging 1 - 24		
							Packaging 1 - 25		

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					Packaging 1 - 26	
					Packaging 1 - 27	
					Packaging 1 - 28	
					Packaging 1 - 29	
					Packaging 1 - 30	
					Packaging 1 - 31	
					Packaging 1 - 32	
					Packaging 1 - 33	
					Packaging 1 - 34	
					Packaging 1 - 35	
					Packaging 1 - 36	
120	Crosstubes - Bend - 2 - B4B	1 pcs	8/19/19	0.50 6.60	Crosstubes - Bend - B4B	PD 8/20/2019
130	QC 15	1 pcs	8/19/19	0.00 0.00	QC 15 - 12	
					QC 15 - 3	
					QC 15 - 47	
					QC 15 - 49	
					QC 15 - 58	
					QC 15 - 9	
140	Crosstubes - 2 - B4B	1 pcs	8/19/19	0.00 2.24	QC 15 - 68	AUG 21 2019 68 9-89
					Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	BB 8/20/2019
					Crosstubes - 3 - B4B	
150	Crosstubes - 3 - B4B	1 pcs	8/19/19	0.00 1.00	Crosstubes - 4 - B4B	
					Crosstubes - 1 - B4B	
					Crosstubes - 2 - B4B	
					Crosstubes - 3 - B4B	BB 8/20/2019
160	QC 7	1 pcs	8/19/19	0.00 0.00	Crosstubes - 4 - B4B	
					QC 7 - 10	
					QC 7 - 13	
					QC 7 - 14	
					QC 7 - 15	
					QC 7 - 17	
					QC 7 - 18	
					QC 7 - 19	
					QC 7 - 2	
					QC 7 - 28	
					QC 7 - 3	
					QC 7 - 30	
					QC 7 - 34	
					QC 7 - 36	
					QC 7 - 37	
					QC 7 - 41	
					QC 7 - 47	
					QC 7 - 48	
					QC 7 - 51	
					QC 7 - 58	
					QC 7 - 59	
					QC 7 - 60	
					QC 7 - 9	
					QC 7 - 68	AUG 26 2019 68 9-89
					QC 7 - 50	
					QC 7 - 67	
					QC 7 - 40	
					QC 7 - 24	

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170 QC 5	1 pcs	8/19/19	0.00 0.00	QC 7 - 43	
				QC 7 - 61	
				QC 7 - 81	
				QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	DAS AUG 26 2019 68
				QC 5 - 9	9-89
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
				QC 5 - 61	
				QC 5 - 81	
180 Outsource - 2 - NDT per QSI038	1 pcs	8/19/19	0.00 0.00	SKY002	2019-08-28
190 Packaging 2-1 - Receive - B4B	1 pcs AC	8/19/19	0.00 0.00	Packaging 2 - 1 - B4B	
				Packaging 2 - 2 - B4B	
				Packaging 2 - 3 - B4B	
				Packaging 2 - 5 - B4B	AC AUG 28 2019
				Packaging 2 - 4 - B4B	
				Packaging 2 - 6 - B4B	
				Packaging 2 - 7 - B4B	
				Packaging 2 - 8 - B4B	
				Packaging 2 - 9 - B4B	
				Packaging 2 - 10 - B4B	
200 QC 5	1 pcs	8/19/19	0.00 0.00	QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	DAS AUG 30 2019 68
				QC 5 - 9	9-89
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
				QC 5 - 61	
				QC 5 - 81	
210 Spray Paint - 2 - B4B	1 pcs	8/19/19	0.00 2.19	Spray Paint - 1 - B4B	
				Spray Paint - 2 - B4B	RD 19-8-11

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220 QC 14	1 pcs	8/19/19	0.00 0.00	Spray Paint - 3 - B4B	
				Spray Paint - 4 - B4B	
				QC 14 - 15	
				QC 14 - 2	
				QC 14 - 34	
				QC 14 - 41	
				QC 14 - 51	
				QC 14 - 58	
				QC 14 - 59	
				QC 14 - 9	
				QC 14 - 68	DAS SEP 05 2019 68
				QC 14 - 40	
				QC 14 - 19	
				QC 14 - 43	
				QC 14 - 24	
				QC 14 - 61	
				QC 14 - 81	
230 Crosstubes - 4 - B4B	1 pcs	8/19/19	0.00 2.24	Crosstubes - 1 - B4B	
				Crosstubes - 2 - B4B	- RD 19-9-1
				Crosstubes - 3 - B4B	
				Crosstubes - 4 - B4B	
240 QC 5	1 pcs	8/19/19	0.00 0.00	QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	DAS SEP 09 2019 68
				QC 5 - 9	9-89
				QC 5 - 50	
				QC 5 - 30	
				QC 5 - 40	
				QC 5 - 61	
				QC 5 - 81	
250 Packaging 3-1 - Stock - B4B	1 pcs	8/19/19	0.00 0.00	Packaging 3 - 1 - B4B	O.R
				Packaging 3 - 2 - B4B	
				Packaging 3 - 3 - B4B	
				Packaging 3 - 4 - B4B	
				Packaging 3 - 5 - B4B	
				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
260 QC 4	1 pcs	8/19/19	0.00 0.00	QC 4 - 28	
				QC 4 - 58	
				QC 4 - 69	
				QC 4 - 9	

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				QC 4 - 46	
				QC 4 - 68	
				QC 4 - 72	
				QC 4 - 74	
				QC 4 - 75	
270	Packaging 3-2 - Stock - B4B	1	8/19/19	0.00 0.00	Packaging 3 - 1 - B4B
	pcs				Packaging 3 - 2 - B4B
					Packaging 3 - 3 - B4B
					Packaging 3 - 4 - B4B
					Packaging 3 - 5 - B4B
					Packaging 3 - 6 - B4B
					Packaging 3 - 7 - B4B
					Packaging 3 - 8 - B4B
					Packaging 3 - 9 - B4B
					Packaging 3 - 10 - B4B
					Packaging 3 - 11 - B4B
					Packaging 3 - 12 - B4B
					Packaging 3 - 13 - B4B
					Packaging 3 - 14 - B4B
					Packaging 3 - 15 - B4B
					Packaging 3 - 16 - B4B
					Packaging 3 - 17 - B4B
					Packaging 3 - 18 - B4B
					Packaging 3 - 19 - B4B
					Packaging 3 - 20 - B4B
					Packaging 3 - 21 - B4B
					Packaging 3 - 22 - B4B
					Packaging 3 - 23 - B4B
					Packaging 3 - 24 - B4B
					Packaging 3 - 25 - B4B
					Packaging 3 - 26 - B4B
					Packaging 3 - 27 - B4B
					Packaging 3 - 28 - B4B
					Packaging 3 - 29 - B4B
					Packaging 3 - 30 - B4B
					Packaging 3 - 31 - B4B
					Packaging 3 - 32 - B4B
					Packaging 3 - 33 - B4B
					Packaging 3 - 34 - B4B
					Packaging 3 - 35 - B4B
					Packaging 3 - 36 - B4B
275	DC - 1 - B4B	1	8/19/19	0.00 0.00	DC - 1 - B4B
	pcs				DC - 2 - B4B
280	QC 21 - FG	1	8/19/19	0.00 0.00	QC 21 - FG - 21
	pcs				QC 21 - FG - 70
					QC 21 - SA - 53
Part Op 110 - (Pick Kit) <i>N/A</i> <i>DD 19 08 20</i> Descriptions: 120 - (CNC Alpha 160 Bender) Bend tube as per Dwg D212-664-241 using CNC bender program 212-af and Folio FT007 130 - (QC15- Crosstube Dimensional Check) 140 - (Crosstubes) 1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551 2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241 4-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241 150 - (Crosstubes Chemical Conversion) ***IMMEDIATELY AFTER GRINDING*** 1- PRESSURE WASH X-TUBE INSIDE AND OUT 2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT AS PER QSI005.					

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160 - (QC7-Inspect Chemical Conversion Coat)
170 - (QC5- Inspect part completeness to step on W/O)
180 - (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order
190 - (Receive & Inspect for Damage & Mat'l Certs) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Ensure copy of NDT results attached to work order.
200 - (QC5- Inspect part completeness to step on W/O) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D212-664-241
210 - (Spray Paint / NDT Room) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** ***VERIFY BY _____ BATCH # TO MATCH W/O _____ ***VERIFY BY _____ PART # TO MATCH W/O _____ ***MASK SCRIBE B# & P# AND VERIFY*** 1-Prime inside & outside crosstube as per QSI 005 4.2 BATCH: 5189222 2- After painting remove masking and apply matte clear coat per QSI005 4.2 BATCH: 5187743 3- MASK UNDERSIDE OF CROSSTUBE AS SHOWN ON DWG BEFORE PAINTING 4 -Paint Outside of Tube as per Dart QSI 005 4.2 BATCH: 5204489
220 - (QC14- Inspect Spray Paint) Then, Wrap in plastic bag to protect from scratches ***VERIFY BY _____ BATCH # TO MATCH W/O _____ ***VERIFY BY _____ PART # TO MATCH W/O _____
230 - (Crosstubes) *****LAY DOWN CORSTUBE ON TABLE AND PUT DT10302 PINS IN SADDLE HOLE FACING UP, USE HOLE IN TAPE MESURE TO PUT IN PINS FOR LOCATING CENTER OF CROSSTUBE. ***** 1- Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 2- Install supports with Proseal 890 per D212-664-241B and QSI 015 A/R Proseal 890 Batch: 5176610 EXP: 19/10 PROSEAL CURE TIME 72 HOURS: Start: 19-9-1 Finish: 19-9-2 3- Install clamps with rubber cushion (ENSURE CLAMPS ARE INSTALL ON TOP SIDE OF CROSSTUBE) using DT9565 as per Dwg D212-664-241B. ***Torque all clamps to 80-100 IN-LBS.***
240 - (QC5- Inspect part completeness to step on W/O) ***RE-CHECK TORQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.*** ***VERIFY BY _____ BATCH # TO MATCH W/O 5176610 ***VERIFY BY _____ PART # TO MATCH W/O _____
250 - (Pick Kit)
260 - (QC4- 100% Inspect kits for completeness) ***VERIFY BY _____ BATCH # TO MATCH W/O _____ ***VERIFY BY _____ PART # TO MATCH W/O _____
270 - Identify and pack for shipping as per PPP D212-664-201B
275 - (Document Control) Photocopy bluefile and create labels as per PPP D212-664-201B CHG006
280 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D212-664-201TRN	Crosstube Turning Detail	1 pcs (1 ea)	110-Packaging 1 - Pick Kit	<u>5202448</u>
D3595-063-530	Rubber Cushion 0.63" Wide X 5.30" Long	4 pcs (4 ea)	230-Crosstubes - 4 - B4B	
D5018-1	Support, 214 Aft	2 pcs (2 ea)	230-Crosstubes - 4 - B4B	
MS21920-28	Clamp	4 Ea (4 ea)	230-Crosstubes - 4 - B4B	
AN6-40A	3/8-24 Bolt X 3" Long	4 Ea (4 ea)	250-Packaging 3-1 - Stock - B4B	<u>5133179</u>
AN6-41A	Bolt	2 Ea (2 ea)	250-Packaging 3-1 - Stock - B4B	<u>5149318</u>
D3428-1	Placard	1 pcs (1 ea)	250-Packaging 3-1 - Stock - B4B	<u>5112841</u>
MS21042L6	Nut	6 Ea (6 ea)	250-Packaging 3-1 - Stock - B4B	<u>5142196</u>
NAS1149D0663J	Washer	18 Ea (18 ea)	250-Packaging 3-1 - Stock - B4B	<u>5165255</u>

FRI 9-6-2019

011794

Job Allocations

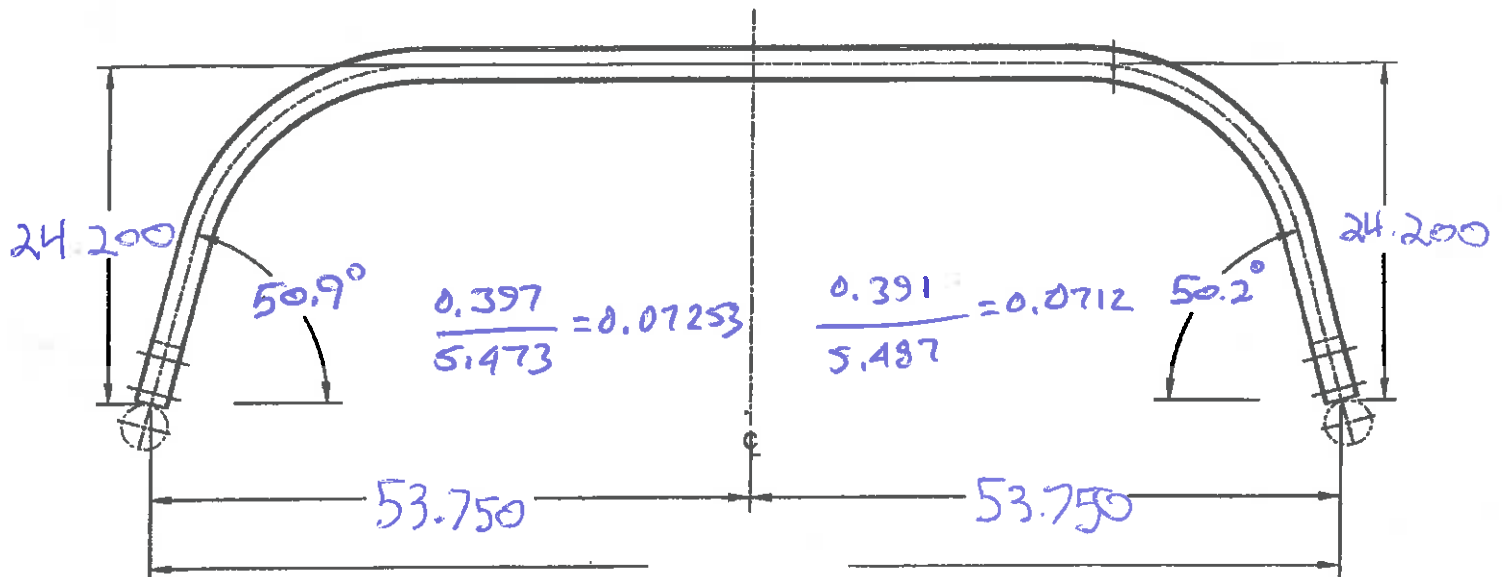
Operation	Component Part	Required	Inventory	Allocated
110-Packaging 1 - Pick Kit	D212-664-201TRN	1	5	0
230-Crosstubes - 4 - B4B	D3595-063-530	<u>4</u> <u>5190585</u>	27	0
	D5018-1	<u>2</u> <u>5130649</u>	6	0
	MS21920-28	<u>4</u> <u>5171291</u>	98	0
250-Packaging 3-1 - Stock - B4B	AN6-40A	4	57	0
	AN6-41A	2	33	0
	D3428-1	1	15	0
	MS21042L6	6	244	0
	NAS1149D0663J	18	588	0

Part Specifications

Specifications could not be found.

DART AEROSPACE LTD		Work Order: 199277
Description: Crosstube High Aft (205/212)		Part Number: D212-664-201
Inspection Dwg: D212-664-241	Rev: E	Page 1 of 1

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70
Bending Passes	5	--
Crushing	--	7.2%



2.538
2.935

	Side A	Side B
Bending Passes		
Crushing	7.2%	7.1%
Comments		

2.548
2.939

QC15 Inspection		DAS
Date		68
		AUG 21 2019 9-89

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM	
C	10.04.01	Dwg Rev updated	KJ	
D	12.04.16	Added bending, crushing dimensions	KJ	
E	14.07.08	Crushing percentage revised	KJ	

Item	Qty -241	Qty -241B	Part Number	Description
1	X		D212-884-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		X	D212-884-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6006-128	CROSSTUBE
4	2		D2940-1	SUPPORT
5	4	4	D3585-083-530	RUBBER CUSHION
6	2	2	D5018-1	SUPPORT
7	4	4	M821820-28	CLAMP (OR M521820-30)
8	AR	AR	PROSEAL 880 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6006-128
FINISHED LENGTH = 124.36250.020
- 2) FINISH: a) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
b) PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
c) MASK UNDERSIDE OF CROSSTUBE AS SHOWN (CN C8-2 / C8-3, HATCHED AREA)
d) PAINT OUTSIDE PER DART QSI 005 4.2
e) REMOVE MASKING AND APPLY MATTE CLEAR COAT
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.006 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-884-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: D212-884-241/241B = 44.2 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLEND OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 10) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 8% (BASED ON O.D.) ON REMAINING TUBE.
- 12) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 13) INSTALL D2940-1 / D5018-1 SUPPORT. ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 880 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 14) INSTALL M821820-28 CLAMPS (OR -30) WITH D3585-083-530 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 880 SEALANT HAS CURED FOR 72 HOURS.

MACHINING

BENDING

- 1) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 7.2% (BASED ON O.D.) IN LOWER HALF OF R35.5 BEND AND 8% (BASED ON O.D.) ON REMAINING TUBE.
- 2) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

ASSEMBLY

- 1) INSTALL D2940-1 / D5018-1 SUPPORT. ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 880 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 2) INSTALL M821820-28 CLAMPS (OR -30) WITH D3585-083-530 RUBBER CUSHIONS TO SECURE THE SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE ON TOP SIDE OF CROSSTUBE.
- 3) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 880 SEALANT HAS CURED FOR 72 HOURS.

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NO 199277 M05
1908-16

RELEASED
2014-05-26

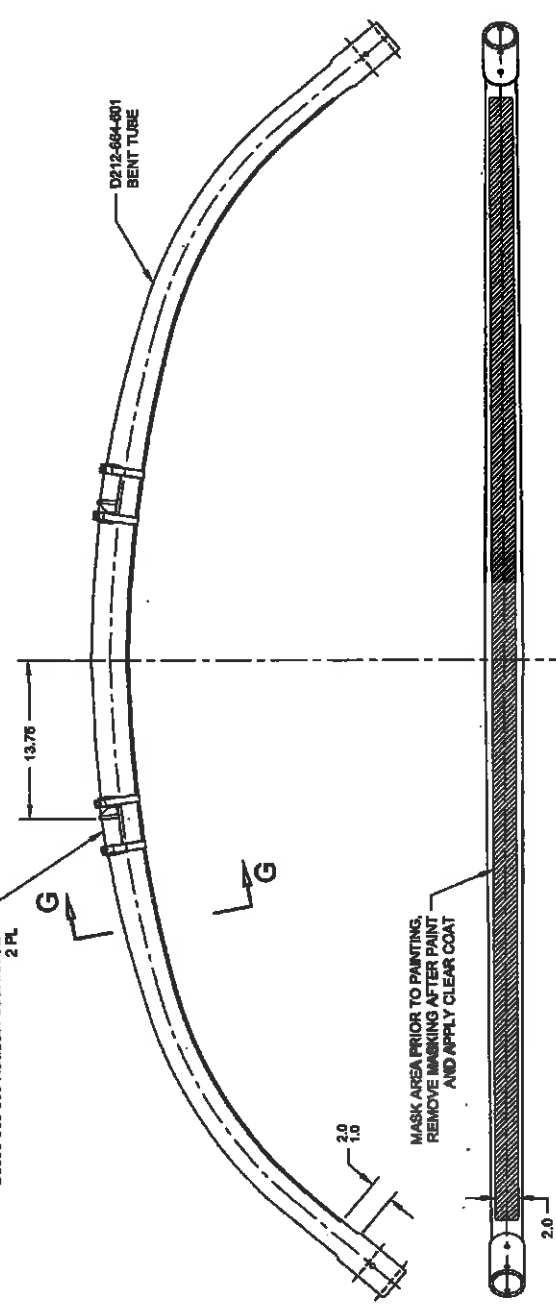
E	D212-1 WAS D2940-1 (-241B). PROSEAL WAS MAGNABOND. NOTE 2: ADD INSPECTION WINDOW, NOTE 11: ALLOW 7.2% GRIND, NOTE 16: ADD 72HR CURE AND RETURN TO PROSEAL. ADD SHEET 3, CLAMPS, BEND REVERSED TO PREVENT CHIPPING (CN D2-2, D2-3). BEND HEIGHT TOL. NOW 0.25 WAS 0.18 (C1-4). INCOMP. DEC D-1P2	CP	14.04.01
D	REFORMAT/REVISE GENERAL NOTES/PART LIST: REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. ADD -241B (CN D4-2, B4-2); REMOVED REF & ADD TOLERANCES (CN D8-3 & C4-3; C8-3 & A9-3); RELOCATED FLAG #6 PER PART D8-46 (CN A8-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	08.08.30
C	REMOVE -1000 ABRASION STRIP; ADD MAGNABOND 6386, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATIBILITY WITH BHT1AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	CP	08.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	14.04.01		

REV. E	DART AEROSPACE LTD HAMMERSLEY, ONTARIO, CANADA
SHEET 1 OF 5	DRAWING NO. D212-884-241
SCALE	TITLE CROSSTUBE ASSY (205/212 HI AFT)
NTS	CROSS-TUBE ASSY (205/212 HI AFT)
DATE	14.04.01

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1 2 3 4 5 6 7 8

13 14 15
 D5018-1 SUPPORT
 MS21920-28 CLAMP, 2X
 D3595-063-530 RUBBER CUSHION, 2X
 2 PL



D212-864-241B
 ASSEMBLY DETAIL

RELEASE
 2014-05-26

DESIGN	0	DART AEROSPACE LTD
DRAWN	0	HAYESBURY, ONTARIO, CANADA
CHECKED	DLJ	DRAWING NO.
MFG. APPR.	DLJ	D212-864-241
APPROVED	DLJ	TITLE
DATE	14.04.01	CROSSTUBE ASSY (205212 HI AFT)
		SCALE
		NTS

SECTION G-G
 SCALE 4X

1 2 3 4 5 6 7 8

Entered: _____ Date: _____

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐



Job: _____ Part No. _____		DISPOSITION Rework ☐ ☐ ☐ Scrap ☐ ☐ ☐ Use-as-is ☐ ☐ ☐				DEPARTMENT/PROCESS Skid-tube ☐ ☐ ☐ ☐ ☐ Machining ☐ ☐ ☐ ☐ ☐ Large Fab ☐ ☐ ☐ ☐ ☐ Cross tube ☐ ☐ ☐ ☐ ☐ Small Fab ☐ ☐ ☐ ☐ ☐ Finishing ☐ ☐ ☐ ☐ ☐ Eng. (Non-AW) ☐ ☐ ☐ ☐ ☐ Prod. Eng. Coord. ☐ ☐ ☐ ☐ ☐ Rec/Store/Packaging ☐ ☐ ☐ ☐ ☐ Engineering ☐ ☐ ☐ ☐ ☐ Water Jet ☐ ☐ ☐ ☐ ☐ Supplier ☐ ☐ ☐ ☐ ☐ Quality ☐ ☐ ☐ ☐ ☐				MRB (QS1042)																									
Date : _____		Sequence #: _____		QTY Affected : _____		Disposition																													
Description Work Order Deviation		Completed By																																	
		Lead hand / Supervisor																																	
		QC / QA Coordinator																																	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY <table border="1"> <tr> <td>Pressure/Forced</td> <td>Contamination</td> <td>Power Loss/Surge</td> <td>Positioned Wrong</td> </tr> <tr> <td>Bending</td> <td>Misaligned/off center</td> <td>Folio/Program</td> <td>Outside Tolerance</td> </tr> <tr> <td>Crushing</td> <td>BOM/Route</td> <td>Grain Direction</td> <td>Drawing</td> </tr> <tr> <td>Cracks</td> <td>Broken/Damage/Defect</td> <td>Weld</td> <td>Finish</td> </tr> <tr> <td>Crimp/Kink/Ripple/Wave/Twist</td> <td>Incomplete/Unclear Instructions</td> <td>Wrong Stock Pulled</td> <td>Part Lost/Missing</td> </tr> <tr> <td>Marks/Chatter</td> <td>Drill Holes</td> <td>Out of Sequence</td> <td>Misread</td> </tr> <tr> <td>Mislabeled</td> <td>Fit/Function</td> <td>Off-set/Set-up</td> <td></td> </tr> </table> Other/Details:						Pressure/Forced	Contamination	Power Loss/Surge	Positioned Wrong	Bending	Misaligned/off center	Folio/Program	Outside Tolerance	Crushing	BOM/Route	Grain Direction	Drawing	Cracks	Broken/Damage/Defect	Weld	Finish	Crimp/Kink/Ripple/Wave/Twist	Incomplete/Unclear Instructions	Wrong Stock Pulled	Part Lost/Missing	Marks/Chatter	Drill Holes	Out of Sequence	Misread	Mislabeled	Fit/Function	Off-set/Set-up	
Pressure/Forced	Contamination	Power Loss/Surge	Positioned Wrong																																
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Mislabeled	Fit/Function	Off-set/Set-up																																	



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044352



Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

Attention: Jenne, Heather

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: POHB044352

PO Date: 8/26/19

Due Date: 8/28/19

**Purchase Order
Revision:**

Revision Date:

Ship-To Contact: Guerin, Kimberley
Phone: 613-632-5200 Ext: 298
kguerin@dartaero.com

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	198971	D212- 664-201	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 ***WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE.*** Issue P/O: LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198972	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198974	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198976	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
	198979	1	X AUG 28 2019	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
Sub Total:							5	0	5		\$703.57



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER

POHB044352



Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
2	199335	D212-664-101B	Fwd Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
3	199277	D212-664-201B	Aft Crosstube - High : TC STC SH01-9 Issue 3, FAA STC SR01298NY 09/01/08, EASA STC EASA.IM.R.S.01304 07/03/06, DGAC MEXICO STC IA-316/2015 15/06/17 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038 Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	8/28/19	1 pcs	0 pcs	1 pcs	\$140.7142/pcs	\$140.71
Grand Total:										\$985.00	

Order Notes

Procurement Quality Clauses
A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 8/28/19 2:38 PM Dart.Guerin.Kimberley

**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO41555	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: POHB044352 ✓
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:**CARRY OUT NDT ON:**

- ✓ 5 AFT CROSSTUBES, P/N: D212-664-201, J/S: 198971, 198972, 198974, 198976, 198979
- ✓ 1 AFT CROSSTUBE, P/N: D212-664-201B, J/S: 199277
- ✓ 1 FWD CROSSTUBE, P/N D212-664-101B, J/S: 199335

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-16						AUG 28 2019	 
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923, DEV. MPO11715, UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

In house
RECEIVED
AUG 28 2019
DART AEROSPACE LTD.

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: AUG 28 2019
Name: RAFFIK MELIKIAN		

SKYM002-1 REV 5 Apr/17

5.0 PARTS LIST

5.1 HIGH GEAR CROSSTUBES

Item	QTY -101	QTY -201	QTY -203	Part Number	Description
	X			D212-664-101	CROSSTUBE INSTALLATION, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
		X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
			X	D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
1	1			D212-664-141	CROSSTUBE ASSEMBLY, 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
2		1		D212-664-241	CROSSTUBE ASSEMBLY, 204/205/210/212/214, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
3			1	D412-664-243	CROSSTUBE ASSEMBLY, 412 HIGH AFT
10	2			* D2893-1	SUPPORT
11	4			* D3595-063-450	RUBBER CUSHION
12	4			* MS21920-25	CLAMP (OR MS21920-26)
13	4			AN6-35A	BOLT
14	4			AN6-36A	BOLT
15	6			MS21042L6	NUT (OR MS21042-6)
16	18			AN960JD616	WASHER
20		2		* D2940-1	SUPPORT
21		4		* D3595-063-530	RUBBER CUSHION
22		4		* MS21920-28	CLAMP (OR MS21920-30)
23		4		AN6-40A	BOLT
24		2		AN6-41A	BOLT
25		6		MS21042L6	NUT (OR MS21042-6)
26		18		AN960JD616	WASHER
30			1	* D2896-1	SUPPORT
32			2	* D3595-063-570	RUBBER CUSHION
33			4	* MS21920-28	CLAMP
34			2	* MS21920-30	CLAMP (OR MS21920-32)
35			4	AN6-40A	BOLT
36			2	AN6-41A	BOLT
37			6	MS21042L6	NUT (OR MS21042-6)
38			18	AN960JD616	WASHER
39			2	* D3189-1	CHAFING SHIELD
50	1	1		D3428-1	PLACARD

* REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/-241 OR D412-664-243 ASSEMBLIES ABOVE.

NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.

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Revision: J

Date: 17.10.04

5.5 214B/B-1 CROSSTUBES

The following crosstube installations are available from Dart for the 214B/B-1 model aircraft:

QTY -101B	QTY -107B	QTY -201B	QTY -207B	Part Number	Description	Equivalent 204/205/212 Kit
X				D212-664-101B	CROSSTUBE INSTALLATION, 214 HIGH FWD	D212-664-101
	X			D212-664-107B	CROSSTUBE INSTALLATION, 214 STANDARD FWD	D212-664-107
		X		D212-664-201B	CROSSTUBE INSTALLATION, 214 HIGH AFT	D212-664-201
			X	D212-664-207B	CROSSTUBE INSTALLATION, 214 STANDARD AFT	D212-664-207
1				D212-664-141B	CROSSTUBE ASSEMBLY, 214 HIGH FWD	D212-664-141
	1			D212-664-147B	CROSSTUBE ASSEMBLY, 214 STD FWD	D212-664-147
		1		D212-664-241B	CROSSTUBE ASSEMBLY, 214 HIGH AFT	D212-664-241
			1	D212-664-247B	CROSSTUBE ASSEMBLY, 214 STD FWD	D212-664-247
2	2			*D5017-1	SUPPORT, 214 FWD	D2893-1
		2	2	*D5018-1	SUPPORT, 214 AFT	D2940-1

* REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141B/-147B/-241B/-247B ASSEMBLIES ABOVE.

The D212-664-101B/-107B/-201B/-207B are the same as the equivalent crosstubes listed in the table above. However, the spacing of the supports is narrower to accommodate 214 model aircraft, as illustrated in Figure 3-11 of these instructions. Additionally the D5017-1 and D5018-1 supports are designed to eliminate interference with the 214 cap assemblies. The kits are otherwise installed, maintained, and have identical replacement parts lists per their equivalent crosstube. All statements in FMS-D214-664 that apply to the D212-664-101/-107/-201/-207 crosstubes are also applicable to D212-664-101B/-107B/-201B/-207B crosstubes.

Note that Dart D212-664-101/-107/-201/-207 crosstubes may also be installed on 214B/B-1 model aircraft. To install on 214 aircraft, the supports on the -101/-107/-201/-207 crosstubes must be repositioned per the support removal/installation instructions of ICA-D212-664 (section 32.3 and section 32.4 of rev. 8 or later revision) using 13.75" spacing (REF). It is also recommended that the D2893-1 and/or D2940-1 supports be replaced with D5017-1 and D5018-1 supports respectively.

Likewise, Dart D212-664-101B/-107B/-201B/-207B may be installed on 204/205/210/412/UH-1 model aircraft. To install on 204/205/210/412/UH-1 aircraft, the supports on the -101B/-107B/-201B/-207B crosstubes must be repositioned per the support removal/installation instructions of ICA-D212-664 (section 32.3 and section 32.4 of rev. 8 or later revision) using 14.00" spacing (REF). It is also recommended that the D5017-1 and D5018-1 supports be replaced with D2893-1 and D2940-1 supports respectively.

Change Record

PAGE 1 OF 1

Part Number: D212-664-201/-201MB

Description: CROSSTUBE INSTALLATION, HIGH AFT

[illegible]